# FOREIGN DIRECT INVESTMENT AND INEQUALITY IN FOUR ASEAN NATIONS

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**Abstract**

We tested the impact of foreign direct investment on inequality in Malaysia, Thailand, Indonesia, and the Philippines- significant FDI recipients amongst developing nations from 1970-2001. Our time-series analyses of the estimated gini coefficients, employing the Autoregressive Distributive Lag (ARDL) technique suggest that FDI improves income inequality in Malaysia and Indonesia but worsens inequality in Thailand while it proved insignificant for the Philippines.

**Keywords**: foreign direct investment, inequality, neo-liberalism, dependency theory, sustainable development, globalization.

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## 1. Background

Amongst developing nations, four Association of Southeast Asian nations' (ASEAN) members-Malaysia, Thailand, Indonesia, and the Philippines-received large portions of Foreign direct investment (FDI) inflows via Multinational corporations (MNCs), entities of neoliberalism, from 1970-2001. For the same period of observation, inequality as measured by estimated gini coefficients seems to be improving in all but for the Philippines where it appears worsening. The ASEAN-4 nations' inequality and FDI trends are shown in Table 1 and Figures 1a through 1d. Given the mixed trend of the ASEAN-4 nations, the main purpose of this study is to investigate the relationship inequality and all FDI inflows in all four nations.

The observations in Malaysia, Thailand, and Indonesia tend to merit neo-liberalism which postulates that markets are inherently efficient and that the STATE and public sector have no essential role in economic development either than facilitating the expansion, intensification, and primacy of market relations (Lowes, 2006). As such, the neo-liberal FDI is hypothesized to improve inequality in the recipient nations. However, Philippines' reverse trend lends some credence to the dependency position that associates FDI with increasing income inequality. Dependency theory which approaches the inequality problem from a world-economy and historical perspective maintains that it is the social control and organization of production as opposed to economic output and wealth that impact income inequality (Chase-Dunn, 1975, Tsai, 1995) and this postulation is more than often operationalised as FDI stocks as opposed to FDI inflows. However, theorists and researchers working in the framework of neoclassical economics view investment dependence as a flow of resources into a country (Chase-Dunn, 1975). However, to the best of knowledge and save for Kaufman (1975) and Mah (2003) who examined the impact of FDI flows on inequality to test the dependency hypothesis, the later dependency literature is somewhat ambiguous on the dependency position of FDI inflows per se and its association with inequality [Firebaugh, (1992) and Dixon and Boswell, (1996)] since there is a dearth of literature on the subject.

**Table 1: Estimated Household Income Distribution (Gini Coefficients) and FDI(Current)(00 000 000)Dollars in ASEAN-4 Nations**

| Nation/Year | 70 | 75 | 80 | 85 | 90 | 95 | 97 | 98 | 99 |
|---|---|---|---|---|---|---|---|---|---|
| **Malaysia Gini** | 44.97 | 42 | 39.08 | 42.67 | 40.62 | 37.9 | 38.34 | 38.28 | 38.1 |
| **Malaysia FDI Flows** | 0.94 | 0.35 | 9.33 | 6.94 | 26.11 | 58.15 | 63.23 | 27.13 | 38.95 |
| **Thailand Gini** | 48.49 | 49.53 | 49.42 | 42.45 | 48.2 | 41.93 | 41.93 | 42.1 | 44.4 |
| **Thailand FDI Flows** | 0.42 | 0.85 | 1.89 | 1.63 | 25.75 | 20.7 | 38.82 | 74.91 | 60.9 |
| **Indonesia Gini** | 50.56 | 50.22 | 50.26 | 49.98 | 46.38 | 47.87 | 44.97 | 44.49 | n/a |
| **Indonesia FDI Flows** | 0.83 | 4.76 | 1.8 | 3.1 | 10.92 | 43.46 | 46.78 | -2.41 | -18.7 |
| **Philippines Gini** | 47.26 | 45.59 | 43.05 | 46.32 | 48.18 | 47.96 | 48.04 | n/a | n/a |
| **Philippines FDI Flows** | -0.01 | 1.14 | -1.06 | 0.12 | 5.5 | 15.74 | 12.6 | 22.12 | 17.25 |

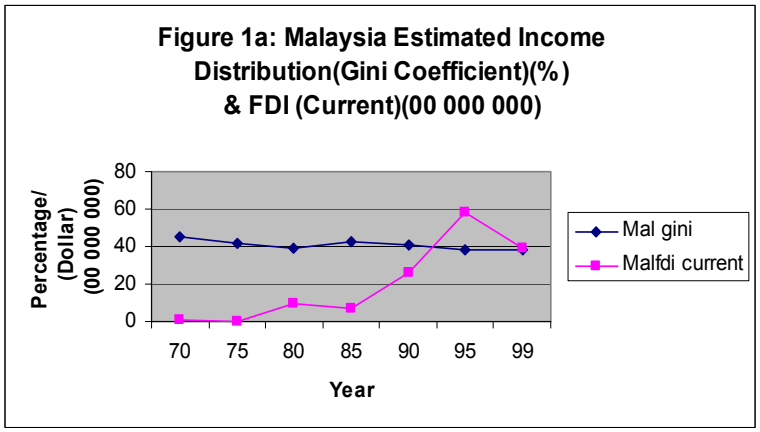


**Figure 1b: Thailand Estimated Income Distribution (Gini Coefficients) (%) & FDI (Current) (00 000 000)**

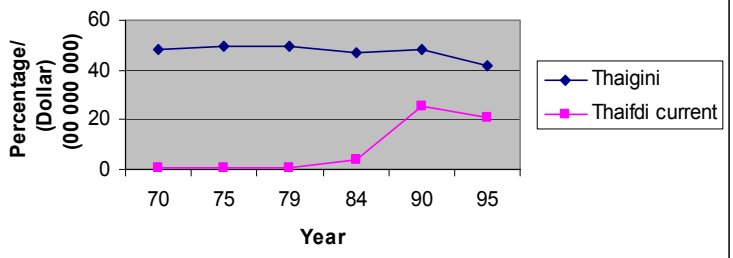



**Figure 1c: Indonesia Estimated Income Distribution (Gini Coefficient)(%) & FDI (Current)(00 000 000)**

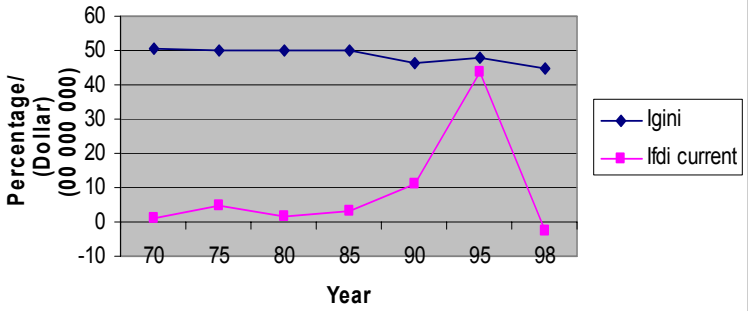
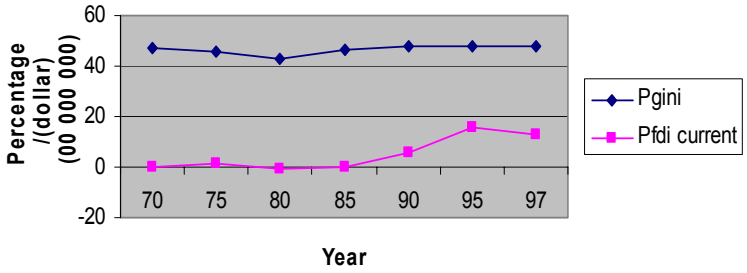



**Figure 1d: Philipines Estimated Income Distribution(Gini Coefficient)(%) & FDI (Current) (00 000 000)**



Reuveny and Li (2003) present several reasons on how FDI inflows might increase income inequality in a host nation. First, MNCs can exert pressure on host governments to cut welfare expenditure and curb labor unions to reduce wages, both of which will have an adverse effect on lower and middle classes. The apparent ease at which MNCs can "pack up and leave for another host nation" is also a factor that decreases the bargaining power of host nations [Nafziger (1997), Salvatore (1998) in Reuveny and Li (2003)]. Second, MNCs' repatriation of profits from less-developed countries (LDCs) causes underdevelopment and hurt the poor. Third, the capital-intensive techniques utilized by MNCs is thought to promote unemployment among unskilled laborers, and to distort income distribution by creating an economy with a small advanced sector and a large backward sector [Muller, (1979), Lall (1985), Jenkins (1996), Robbins (1996), Nafziger (1997) in Reuveny and Li (2003), (Sylwester, 2005).] This is akin to Feenstra and Hanson (1997)'s argument that FDI inflows into developing nations cause a higher wage for skilled workers than unskilled workers, resulting in widening income inequalities. Fourth, MNCs are alleged to have low remuneration in labor intensive industries such as footwear and clothing, and to push domestic suppliers to follow suit in order to reduce the MNCs purchasing cost [Barnet and Cavangh (1994), Held et al. (1999) in Reuveny and Li (2003)]. Fifth, domestic tax systems are not well suited to tax MNCs. The smaller tax base reduces government revenue-and therefore, welfare expenditures-, which places the poor at a disadvantaged position than it does the wealthy [Haitzius (1997) and Human Development Report (1999) in Reuveny and Li (2003)].

On the other hand, there are also several reasons on why FDI inflows might improve income inequality. First, MNCs provide developing nations with capital and technology, improve their corporate governance, and propagate better management practices. These forces, in turn, raise productivity and promote economic growth [Hanad and Harrison (1993), OECD, (1994), Coe et. al. (1994), Blomstrom and Kokko (1996), Marjusen and Venables (1999), Batra and Tan (1997) in Reuveny and Li (2003)].

Dollar and Kraay (2000) also support this view in which economic growth is thought to raise the income of the poor proportionally more than that of the rich, making FDI a useful for reducing poverty (Stiglitz, 1998). If FDI increases the demand for unskilled workers or provides economic opportunities for those who would not otherwise be employed, then host FDI nations would experience an improvement in income inequality (Sylwester, 2005, Mundell, 1957 in Mah 2003).

Second, contrary to conventional wisdom, some scholars argue that MNCs cannot easily relocate from one country to another in order to reduce their labor costs because lower wages are often associated with lower labor productivity. In this

manner, labor's bargaining power is not necessarily diminished by FDI (Lawrence, 1994 in Reuveny and Li (2003)]. If FDI increases the demand for unskilled workers or provides economic opportunities for those who would not otherwise be employed, then host FDI nations would experience an improvement in income inequality (Sylwester, 2005). This view is also espoused by Mundell (1957) who suggested that FDI inflows contribute to a reduction of income distribution in developing countries as is known as Mundell's hypothesis. Furthermore, it is argued that host governments can regulate the operation of MNCs, thus controlling their effects on host economies [Vernon, (1971), and Kurzer (1993) in Reuveny and Li (2003)].

## 2. Literature Review

The first literature reviewed is a cross-national study on the effects of international economic dependence on development and inequality by Christopher Chase Dunn (1975). This simple study tests the effects of investment dependence as in FDI stocks on income inequality with gini coefficients as proxy at two points in time, 1950, and 1970. Dunn reported that the two variables, foreign investment and debt, are positively correlated and may have similar effects on economic development and income inequality. The hypothesis that dependence maintains income inequality in peripheral countries is weakly supported as the dependence effects are positive but not statistically significant.

Saltz (1992) presents empirical evidence that FDI stock skews the income distribution of the Third World. Saltz's results show that a larger presence of FDI stocks significantly increases the share of income of the wealthiest households and decreases the share of income of the poorest households. The rationale is that the degree of monopolization by multinationals increases the return to capital and that MNCs use more capital-intensive technologies or produce mostly in more capital-intensive sectors. Thus, it is likely that a larger presence of FDI causes a higher share of income to accrue to wealthier households.

Tsai (1995) tests the relationship between FDI stocks and income inequality as measured by gini coefficients by comparing models with and without geographical dummies using OLS. The results show that only East and Southeast Asia's less developing nations appear to be harmed by FDI during 1970s. In other words, to the extent that FDI does have a negative impact on host countries' income distribution, it is truer for Asia in the 1970's than in any other geographical area. The results refer to marginal impacts only since there is no definite way to tell from a regression coefficient the total impact of any explanatory variable on dependent variables. Hence, even in the marginal sense, Tsai's results tend to be supportive of the arguments of dependency theorists as

far as Asia is concerned for a given time period but not for Latin America and Africa.

Mah's (2003) empirical model examines the impact of globalization on income distribution in Korea from 1975 through 1995. Trade expansion (openness ratio) and FDI inflows are the two proxies for globalization and proved insignificant in influencing the gini coefficients. The empirical evidence shows that neither the openness ratio nor FDI inflows significantly influence Gini coefficients contrary to the widely held notion that globalization worsens income distribution. Hence, neither Mundell's (1957) hypothesis which predicts that larger FDI inflows improve income distribution in developing countries nor the arguments of Feenstra and Hanson (1997) as well as that of dependency theory which both postulate that larger FDI inflows worsens income distribution are supported by Mah's empirical findings. Even Figini-Gorg's two-stage hypothesis that gini coefficients rise and then fall with increase in FDI inflows is also not supported in the study. However, caution is required in interpreting Mah's results as several explanatory variables such as gross national product and its squared value as well as those of FDI inflows were not stationary at any reasonable level of significance and hence cointegration tests were not pursued in the study rendering the results spurious. Hence, the results are at best suggestive and not definitive.

## 3. Empirical Model

Hence, we propose the following model to test Neoliberal theory in tandem with Mundell (1957)'s hypothesis as well as that of dependency theory Mah (2003) and the corroborating postulation of Feenstra and Hanson (1997) on income distribution in the ASEAN-4 nations:

$$Gini_t = \beta_0 + \beta_1 GDP_t + \beta_2 FDI_t + \beta_3 DOM_t + \beta_4 TRADE_t + \varepsilon_t \quad (1)$$

where

$Gini_t$ = Estimated Gini index X 100

$GDP_t$ = real per capita GDP

$FDI_t$ = nominal gross FDI inflow as % nominal GDP

$DOM_t$ = nominal gross Domestic Investment as % nominal GDP

$TRADE_t$ = Import +Export/ GDP X 100

Based on Kuznet's hypothesis, it is expected

$\beta_1 > 0$

Based on Neo-liberal theories, it is expected:

$\beta_2, \beta_3, \beta_4 < 0$

Based on Mundell hypothesis, it is expected:

$\beta_2 < 0$

Based on dependency theory Mah (2003) it is expected:
$\beta_3 < \beta_2 \quad \beta_{2,}\beta_4 > 0$

Based on Feenstra and Hanson (1997), it is expected:
$\beta_2 > 0$

**4. Variables and Data**

The gini coefficients used in this study are based on the University of Texas Inequality Project (UTIP) headed by Professor Kenneth Galbraith. Although pay inequality and income inequality are different economic concepts, they are related argue Galbraith and Kum (2004). Galbraith and Kum consider manufacturing pay as a significant component of all pay in most countries because pay makes up the largest single element in income for the majority of countries. Moreover, the manufacturing sector is very important to the economy justify Galbraith and Kum. "Largely unskilled (and low-wage) workers in manufacturing are substitutes for unskilled (and similarly low-wage) workers in services and agriculture, and vice versa further justify the researchers" (Galbraith and Kum, 2004, p.8). Galbraith and Kum postulate that it is probable (though *not* certain) that changes in inequality inside manufacturing will tend to reflect changes in inequality in the structure of overall pay. These set of Ginis are the most comprehensive data set surveyed. Furthermore, they represent an exciting alternative in estimating income inequality throughout the world as opposed to using the Deninger and Squire Ginis data set that are computed from a mixed bag of household income and expenditure surveys, a mixed of different measures of inequality, gross and of net income, and a mixed of measures that are both personal and household income inequality. Moreover, UTIP ginis are standardized and can compare between vast numbers of nations possible, as well as easily downloaded from the UTIP website without any restrictions on their publication.

Barro (2000) in Mah (2003) shows that Gini value rises with GDP per capita for its value less than US 1,600 and declines hereafter. Hence, modernization or neoclassical theory postulates that at the initial stage of development, GDP worsens income distribution. GDP per capita (Tsai, 1995) as opposed to GNI per capita (Mah, 2003) was chosen because FDI in the ASEAN-4 nations is thought to contribute more to GDP as opposed to GNI. The real GDP per capita income is based on 1995 prices and sourced from the World Development Indicators 2003. From 1970 to 2001, none of the ASEAN-4 nations had increased its GDP per capita to its squared value and thus, we have chosen the linear versions of the income inequality model by omitting the squared term of GDP per capita.

In the developing labor abundant countries, the returns to laborers have been manifested both in lower income inequality within the workforce and in lower levels of unemployment among prospective workers (Mah, 2003). Trade theory based on the Hercksher-Ohlin (HO) theorem predicts that trade liberalization leads to greater specialization and a rise in national income in participating countries, following a more rational global allocation of production inspired by the principle of comparative advantage. In labor-abundant countries, trade liberalization is expected to switch production from capital-intensive and inefficient import-substitutes towards efficient labor-intensive exportables. The Stolper-Samuelson theorem posits that such shifts lead to the convergence in the prices of goods and factor remunerations. As a result, domestic inequality is expected to decline in countries endowed with an abundant labor supply and to rise in those with an abundant endowment of capital, as the demand for and remuneration of the latter (that exhibits an unequal income distribution) will increase, while the demand and remuneration of labor (that is distributed more equitably) will fall [Kenen, (2000)]. TRADE, both a proxy of openness and trade dependence, will be measured in terms of Import + Export / GDP X 100 (Mah, 2003). This measurement eliminates the possible biases caused by the official exchange rate (Mah, 2003). Essentially, TRADE openness captures the degree that each nation is integrated into the global economy. Neo-classical together with neo-liberal theory predicts that the integration into the global economy facilitates development, while dependency theory posits that this provides through which any of the deletrious processes of foreign involvement in the local economy might operate, thus creating inequality.

Besides TRADE, Mah (2003) contends that the impact of FDI inflows on income distribution in developing countries must be taken into consideration since it impacts income distribution in the ASEAN-4 in the same manner that TRADE does as described by the Stolpher-Samuelson theorem. Maher, Jesuit, & Roscoe, (1999) in Mah (2003) assert that there is not much literature on the impact of FDI inflows on income distribution although the relationship between the two is prima facie. Assuming international capital movement from a developed country to a developing one, more capital exists in the developing country than previously present. Wage would rise in the developing country which has attracted FDI reflecting an increase in marginal product of labor Thus, Mundell hypothesizes that the increase of FDI inflows reduces income inequalities in developing countries [Mundell (1957 in Mah (2003)]. While modernization theorists seldom address the distributional impact of FDI directly and explicitly, their position is clearly implied in their treating foreign and domestic capital as homogeneous goods. Modernization theory postulates that regardless of origin, capital drives growth and its benefits eventually spread throughout the economy (Tsai, 1995). Thus, even if FDI initially stimulates growth only in some leading sector, develops allied local elites, or leads to economic dualism, the growth in the leading sectors could result in improved income distribution in the long run.

Asean nations have experienced increasing employment at low wages, which in turn raises the labor share, and improving the size of distribution of income supports the postulation of modernization theory (Tsai, 1995). Chase-Dunn (1974) in Rubinson (1976) argues that foreign capital gravitates to those areas where domestic capital is low because profits would be higher there, and a low level of domestic capital increases income inequality. Also Streeten (1973) in Firebaugh (1992) reasons that domestic investment is more likely than FDI to contribute to public revenue, as transnational corporations are likely to avoid taxes through mechanisms such as "transfer pricing". Jackman (1982) postulates that in view of the central role assigned to capital investment, it would be wise to add the level of Gross domestic investment to the inequality equation to test modernization theory's postulation that the source of the capital is not critical. FDI inflows and Gross Domestic investment will be expressed in terms of percentage GDP.

## 5. Model Estimation: Autoregressive Modeling Approach

We chose the Autoregressive modeling approach by Pesaran et. al. 2001 over the conventional maximum likelihood based on Johansen 1991 and Johansen and Juselius 1990 approach, used for the multivariate case, for several reasons. First, the ARDL approach which requires the dependent variable or regressor to be I(1)is mainly advantageous because the explanatory variables or regressands can either be purely I(0) or I(1) or a mix of both**.** The Johansen (1991) and Johansen and Juselius (1990) approach requires that the variables in the system be of equal order of integration. Second, ARDL takes sufficient numbers of lags to capture the data generating process in a general-to-specific modeling framework (Laurenceson and Chai 2003:28 in Shrestha, 2005). Third, the ARDL Error Correction Model integrates the short-run dynamics with the long-run equilibrium without losing long-run information. Fourth, this approach can be applied to studies with a small sample size such as this study. It is widely understood that the Engle & Granger 1987, and Johansen 1988, 1995 methods of cointegration are not reliable for small sample sizes. Pattchis 1999, Tang 2001, Tang 2002, and Tang and Nair 2002 in Narayan and Smyth, 2005 all used sample sizes smaller than 30 observations in their respective studies.

## 6. Bounds Test Results

The Bounds Test was used on all models to investigate the presence of a long run relationship among the variables specified for each nation. In table 2, the results of Pesaran *et. al* (2001) bounds test demonstrate that the null hypothesis $c(1)=c(2)=c(3)=c(4)=c(5)=0$ against its alternative, $c(1) \neq c(2) \neq c(3) \neq c(4) \neq c(5) \neq 0$ is easily rejected at the 1 % confidence level for all ASEAN-4 nations. The computed F-statistics for Malaysia at 6.938993, Thailand at 10.04337, Indonesia at 9.939957, and the Philippines at 10.03422 are

all greater than the upper critical bound of 4.68 for the 1% significance level. Hence, the null hypothesis of no cointegration is rejected at that level.

Based on the test results, it is concluded that there exists a steady-state long-run relationship amongst the Gini Coefficient, GDP Per Capita, Domestic Investment, FDI, and TRADE for all four nations. Simply, for the ASEAN-4 nations, all five variables do not move "too far away" from each other in the long-run.

**Table 2: Bounds Test for Cointegration Test**

Null Hypothesis: No Cointegration
Computed F-statistic (Wald Test):

| | | |
|---|---|---|
| Malaysia | : | 6.938993 |
| Thailand | : | 10.04337 |
| Indonesia | : | 9.939957 |
| Philippines | : | 10.03422 |

| | Critical Value | |
|---|---|---|
| | Lower | Upper |
| 1% significance level | 3.41 | 4.68 |
| 5% significance level | 2.62 | 3.79 |
| 10% significance level | 2.26 | 3.35 |

Decision: Reject or Accept null hypothesis at 1 % significance level

Note: The critical value is taken from Pesaran et. al. (2001). Table C (iii) Case III. Unrestricted intercept and no trend.

**Table 3: Long-run Elasticities**

| | Malaysia | Thailand | Indonesia | Philippines |
|---|---|---|---|---|
| **GDP Per Capita** | -1.08** | -0.36** | -0.03 | -0.10*** |
| **FDI** | -1.10** | 0.09*** | -0.13** | 0.01 |
| **Domestic Investment** | 1.95** | 0.002 | -0.18** | -0.13** |
| **TRADE** | 0.46 | 0.36** | 0.04 | 0.12** |

Note: * ** *** denote significance at the 1%, 5%, and 10 % significance levels respectively.

The computed results of the long-run elasticities for the determinants of the Gini coefficient are shown in Table 3.

The estimated results show that for Malaysia, GDP per capita, FDI, and Domestic Investment significantly influence the level of the gini coefficient. The estimated coefficients imply that a 1% increase in GDP per capita and FDI will lower the gini index by 1.108 % and 0.57% respectively. The negative sign for $\beta_1$ does not support Kuznet's hypothesis but it is supported by Bornschier (1983) linear model's results. The significantly negative value for coefficient $\beta_2$ neither supports dependency theory as postulated by Mah 2003 nor Feenstra and Hanson's hypothesis. Alternatively, it supports the neo-classical and neoliberal postulations as well as Mundell's hypothesis. A 1% increase in domestic investment will worsen the gini index by 1.95% and hence, coefficient $\beta_3$'s positive value does not support the postulation of the neo-liberal position that capital is capital. The different signs for FDI and domestic investment appear to augur well with the postulation that the Malaysian policymakers were politically motivated in encouraging FDI to 'balance' investment in the local economy. This period also coincided with the government's affirmative action for Malaysia's *Bumiputras* or sons of the soils beginning 1970s (Jomo, 2000). As far as inequality is concerned, it appears that FDI did have a positive impact in improving Malaysian inequality especially when domestic capital is associated with worsening inequality trend. The insignificance of TRADE does not fall neatly in either the neo-liberal or the dependency school of thought and would corroborate the postulation that the East Asian economies do not demonstrate any clear relationship between export-oriented industrialization and better income distribution (Jomo 2000) given that Malaysia is a nation with both high export and import values that are positively related with each other.

For Thailand, the estimated results show that only GDP Per Capita, FDI, and TRADE are significant determinants of inequality. As such, a 1% increase in GDP Per Capita will decrease the gini coefficient by 0.36 %. Again, $\beta_1$'s negative sign is in line with Bornschier (1983) as well as Ikemoto and Uehara(2000) who postulated that the Kuznets' turning point could have happened several times in the Thai economy as in each time a new high-productivity industry is introduced into a matured economy. A 1 % increase in FDI will lead to a rise of 0.09 % in the gini coefficient which supports the dependency position as postulated by Mah 2003. Conversely, this finding supports neither the neo-liberal position nor Mundell's hypothesis. Hence, $\beta_2$'s positive sign means that FDI worsens income inequality in Thailand and is supported by Ikemoto and Uehara who postulated that the emergence of export-oriented manufacturing industries established by FDI increased income inequality in Thailand in the latter 1980s. Velde and Morrisey (2002) contends that Thailand attracted a quarter of FDI inflows into capital-intensive and relatively skill-intensive chemical, machinery, and electrical

manufacturing sectors implying that FDI composition effect is unlikely to have reduced wage inequality which would have resulted in lower income inequality since wage is a large component of income. The crux of Ikemoto and Uehara's thesis is that when an economic structure is rapidly changing, income inequality tends to be higher as in the case of Thailand. Thus, it is no surprise then that $\beta_3$ proved insignificant and rendering Thailand's domestic investment insignificant in determining income inequality given that the Thai economy was changing to a domestic-oriented economy in the mid-1990s and the direction of income equality could not be established by Ikemoto and Uehara. Essentially the export-oriented economic growth could absorb the under-employed labor force in rural areas but it failed to decrease income inequality perhaps because the Thai economy was changing to a domestic-oriented economy that subsequently resulted in the bubble economy which burst in 1997 at the onset of the Asian financial crisis. In line with dependency theory as postulated by Mah (2003), $\beta_4$'s negative sign renders TRADE to have worsened income inequality for Thailand. As such a 1% increase in TRADE will worsen income inequality by 0.36%. Dependency theory is supported here and neo-liberal theory refuted.

Indonesia's estimated results indicate that only FDI and domestic investment significantly influence the level of inequality. As such $\beta_1$ is insignificant. Perhaps the level of economic development is less important than the Indonesian government's redistributive policies and their implementation in combating inequality given the vastness of the nation and the concentration of development in Java.(quote from growth paper). Given that both $\beta_2$ and $\beta_3$ have negative signs, a 1% increase in FDI and domestic investment will lead to a decrease in gini coefficient by 0.13% and 0.18% respectively. $\beta_2$'s negative sign supports the neo-classical and neoliberal postulations as well as Mundell's hypothesis and refutes dependency theory as postulated by Mah (2003) as well as Feenstra and Hanson's hypothesis. $\beta_2$'s positive sign is supported by Oshima (1998) who explained that import-substitution policies protecting capital-intensive industries began to be dismantled in the mid-1980s, and export promotion was initiated under deregulation, devaluation, liberalization, and other reforms. According to Oshima, labor-intensive industries and non-petroleum exports grew rapidly while severe underemployment, which included 45% of the labor force in 1975 and 38% in 1980 fell dramatically to 13% in 1986. Consequently, this contributed to lowering of the rural Gini coefficient during the 1980s. The UNDP-DITE (2006) sectoral FDI data corroborates Oshima's analyses since approximately 60% of FDI flowed into manufacturing which is a generally labor-intensive industry from 1989 through 2004. Again, the insignificance of TRADE is corroborated by Jomo (2000).

In Philippines' case, only GDP Per Capita, Domestic Investment and TRADE are significant in determining the level of inequality. A 1% increase in GDP Per

Capita will decrease inequality by 0.10%. As in previous cases, $\beta_1$'s negative sign is corroborated by Bornschier (1983). However, unlike in the previous cases, $\beta_2$ is insignificant and renders FDI insignificant in determining the dependent variable (Velde and Morrisey, 2002). Hence, all of the study's postulations and hypotheses are not supported in this instance. $\beta_3$ has a negative sign which translates to a 1% increase in domestic investment to having decrease the gini coefficient by 0.18%. This finding is supported by Bello (2006) who advocates the necessity to accumulate the capital necessary for strategic investments such as reinvigorating local manufacturing and agricultural industries through flexible application of the principle of subsidiarity or whatever can be produced at the local level at the least cost should be undertaken at that level. $\beta_4$ is significant and a 1% increase in TRADE will to a 0.12% increase in income inequality. Hence, dependency theory is supported here neo-liberal theory refuted.

## 7. Conclusion

This study examines the impact of FDI inflows on income distribution in individual ASEAN-4 nations from 1970 through 1999 using the ARDL approach. ARDL developed by Pesaran et.al (2001) is most suitable for small sample size studies such as this. GDP Per Capita, Domestic Investment, and Trade were included in the study to help explain the level of income distribution inequality in each nation. Essentially, this study tests several postulations. First is the Kuznet's hypothesis which falls under the umbrella of neo-liberalism that initial increases in GDP per capita would lead to increased inequality. Second is the dependency theory as postulated by Mah (2003) that FDI inflows worsen inequality. Third is the neoclassical and neo-liberal postulation that FDI inflows improve inequality. Fourth is Mundell's hypothesis, also a child of neo-liberalism, that FDI inflows improve income inequality. Fifth is that TRADE improves income distribution as postulated by the neo-classicals and neo-liberals and that it worsens inequality as postulated by dependency theorists. Hence, this study is a dichotomy of neo-liberal and dependency theory.

Increases in GDP per capita and FDI inflows help improve inequality in Malaysia whereas increases in domestic investment appear to have a reverse impact. TRADE proved insignificant. The Malaysian case validates both neo-liberal claims. However, the insignificance of TRADE falls in neither school-of-thought.

Higher GDP per capita improves inequality for Thailand but higher FDI and TRADE worsens it. Hence, as far as FDI and TRADE are concerned, the postulations of dependency theory are upheld and the insignificance of Domestic investment renders support to neither school of thought.

As for Indonesia, both FDI and Domestic Investment improve income inequality which validates the postulations of neo-liberalism but the insignificance of GDP per capita and TRADE does not support either school of thought.

For the Philippines, increases in GDP per capita and Domestic Investment improve income inequality but increases in TRADE worsen inequality which supports dependency theory. The insignificant FDI cannot be supported by either school of thought.

Neo-liberal thought is dominant in both Malaysia and Indonesia but Thailand's findings give much merit to the arguments of dependency theory. If globalization were proxied by FDI inflows and TRADE, it could be concluded that globalization worsens inequality in Thailand. In the Philippines' case, it is only globalization via TRADE that worsens inequality. Thus, the alleged importance of FDI via TNCs in the Asean region and the larger East Asian regional development can be challenged with regards to Thailand and the Philippines.

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## Appendix:

### Table A: Results of the Augmented Dickey Fuller and Phillips-Perron Unit Root Tests

| | Augmented Dickey Fuller Test | | Phillips-Perron Test | | Augmented Dickey Fuller Test | | Phillips-Perron Test | |
|---|---|---|---|---|---|---|---|---|
| | **Level, No Trend** | **Level, Trend** | **Level, No Trend** | **Level, Trend** | **Ist difference** | | | |
| **LMGDPPC** | -1.299400(0) | 1.730586(0) | -1.257404(1) | -1.909299(1) | -4.338705(0)* ** | -4.445077(0)* ** | -4.354665(1)* ** | -4.460198(1)* ** |
| **LMDOM** | -2.577208(1) | -2.906194(1) | -2.126948(1) | -2.188062(1) | -4.142183(0)* ** | -4.123558(0)** | -4.164567(1)* ** | -4.148395(1)** |
| **LMFDI** | -2.360528(0) | -2.217908(0) | -2.341061(1) | -2.199225(1) | -6.428858(0)* ** | -6.424913(0)* ** | -6.431289(1)* ** | -6.431198(1)* ** |
| **LMEXP** | 0.125900(0) | -3.355337(0) | 0.145819(1) | 3.441441(1) | -6.089666(1)* ** | -5.997186(1)* ** | -5.347183(1)* ** | 5.319614(1)* ** |
| **LMHC** | 6.482882(0)* ** | -1.348718(0) | 6.427694(1)* ** | -1.343963(1) | -3.030320(0)** | -5.473502(2)* ** | -2.998993(1) | -4.647588(1)* ** |
| **LTGDPPC** | -0.928173(1) | 1.986170(1) | -0.596621(1) | -1.398454(1) | -3.108496(0) ** | -3.097241(0) | -3.163426(1)** | -3.143710(1) |
| **LTDOM** | -2.211653(1) | -1.356665(0) | -1.792365(1) | -1.594135(1) | -4.322448(0)* ** | -4.369921(0)* ** | -4.336675(1)* ** | -4.376928(1)* ** |
| **LTFDI** | -2.163167(0) | -2.625081(0) | -2.242788(1) | -2.803079(1) | -5.468957(0)* ** | -5.402358(0)* ** | -5.469105(1)* ** | -5.402606(1)* ** |
| **LTEXP** | -0.815406(0) | -2.426663(0) | -0.782132(1) | -2.419561(1) | -6.516736(0)* ** | -6.404957(0)* ** | 6.525751(1)* ** | -6.412826(1)* ** |
| **LTHC** | 2.341432(0) | -1.092512(0) | 2.337776(1) | -1.129283(1) | -3.898050(0)* ** | -4.263831(0)** | -3.924638(1)* ** | -4.269305(1)** |
| **LIGDPPC** | -1.828816(0) | -0.588236(0) | -1.710269(1) | -0.903883(1) | -3.969341(0)* ** | -4.269396(0)** | -3.983951(1)* ** | -4.284313(1)** |
| **LIDOM** | -1.945298(0) | -1.742957(0) | -2.119759(1) | -1.883977(1) | -4.406805(0)* ** | -5.273332(0)* ** | -4.421170(1)* ** | -4.516232(1)* ** |
| **LIFDI** | -2.334102(0) | -3.331335(1) | -2.568051(1) | -2.723986(1) | -4.847377(1)* ** | -4.754558(1)* ** | -4.697610(1)* ** | -4.620578(1)* ** |
| **LIEXP** | -2.381232(0) | -2.796891(0) | -2.331230(1) | -2.766453(1) | -6.490995(0)* ** | -6.390451(0)* ** | -6.497581(1)* ** | -6.395057(1) |
| **LIHC** | 9.439870(0)* ** | -3.422209(0) | 8.410887(1)* ** | -3.364329(1) | -2.278501(0) | -3.453136(0) | -2.250054(1) | -3.453722(1) |
| **LPGDPPC** | -2.893563(1) | -3.014309(1) | -2.334287(1) | -2.164366(1) | -2.980242(0)** | -2.959669(0) | -3.107834(1)** | -3.098559(1) |
| **LPDOM** | -2.316783(1) | -2.975125(1) | -1.743960(1) | -2.211181(1) | -4.425238(1)* ** | -4.513966(1)* ** | -3.983559(1)* ** | -3.990438(1)** |
| **LPFDI** | -2.325775(0) | -2.523062(0) | -2.235070(1) | -2.44227(1) | -6.545316(0)* ** | -6.490933(0)* ** | -6.546237(1)* ** | -6.492240(1)* ** |
| **LPEXP** | 0.034208(0) | -1.554838(0) | -0.040166(1) | -1.623349(1) | -5.055146(0)* ** | -5.117741(0)* ** | -5.055690(1)* ** | -5.119255(1)* ** |
| **LPHC** | 5.879084(0)* ** | -0.958393(1) | 4.646257(1)* ** | 0.857312(1) | -1.900415(0) | -2.550913(0) | -1.901259(1) | 2.589312(1) |

Note:* and ** denote significant at the 1%, and 5% significance levels respectively.

## Table B: Malaysia: Unrestricted Error Correction Model Results

| Variable | Coefficient | Std. Error | Prob. |
|---|---|---|---|
| LMGINI(-1) | -0.2457 | 0.1178 | 0.0636 |
| LMGDPPC(-1) | -0.2654 | 0.0843 | 0.0104 |
| LMFDI(-1) | -0.2696 | 0.0617 | 0.0014 |
| LMDOM(-1) | 0.4799 | 0.0935 | 0.0004 |
| LMTRD(-1) | 0.1142 | 0.0785 | 0.1762 |
| DUM | -0.0151 | 0.0062 | 0.0361 |
| D(LMGINI(-1)) | -0.4035 | 0.2354 | 0.1173 |
| D(LMFDI(-1)) | 0.2085 | 0.0447 | 0.0009 |
| D(LMFDI(-2)) | 0.1395 | 0.0477 | 0.0152 |
| D(LMFDI(-3)) | 0.1383 | 0.0387 | 0.0050 |
| D(LMDOM(-1)) | -0.2912 | 0.0578 | 0.0005 |
| D(LMDOM(-2)) | -0.3309 | 0.0787 | 0.0018 |
| D(LMDOM(-3)) | -0.2413 | 0.0678 | 0.0052 |
| D(LMTRD(-1)) | -0.1659 | 0.0883 | 0.0896 |
| C | 0.6382 | 0.2217 | 0.0164 |
| N=25 | | | |
| Adjusted R-squared | 0.6622 | | |
| S.E. of regression | 0.0050 | | |
| F-statistic | 4.3609 | | |
| Prob(F-statistic) | 0.0122 | | |
| | Test-Statistics | P-value | |
| Jarque-Bera Normality Test | 0.8914 | 0.6404 | |
| Breusch-Godfrey LM Test (Lag 1) | 3.1441 | 0.1100 | |
| ARCH Test (Lag 1) | 0.1306 | 0.7213 | |
| Ramsey Reset (Lag 1) | 2.3433 | 0.1602 | |

## Table C: Thailand: Unrestricted Error Correction Model Results

| Variable | Coefficient | Std. Error | Prob. |
|---|---|---|---|
| LTGINI(-1) | -2.0074 | 0.3589 | 0.0002 |
| LTGDPPC(-1) | -0.7164 | 0.1319 | 0.0003 |
| LTFDI(-1) | 0.1870 | 0.0875 | 0.0583 |
| LTDOM(-1) | 0.0034 | 0.1113 | 0.9765 |
| LTTRD(-1) | 0.7267 | 0.1526 | 0.0008 |
| D(LTGINI(-1)) | 2.0050 | 0.4021 | 0.0005 |
| D(LTGINI(-2)) | 0.6380 | 0.2805 | 0.0462 |
| D(LTGINI(-3)) | 0.9076 | 0.2703 | 0.0073 |
| D(LTGDPPC(-1)) | -1.4174 | 0.6077 | 0.0419 |
| D(LTGDPPC(-2)) | 0.4855 | 0.4034 | 0.2565 |
| D(LTGDPPC(-3)) | 0.8960 | 0.4317 | 0.0647 |
| D(LTFDI(-1)) | -0.4390 | 0.1687 | 0.0264 |
| D(LTFDI(-2)) | -0.8926 | 0.1935 | 0.0010 |
| D(LTDOM(-1)) | 0.3232 | 0.1332 | 0.0356 |
| D(LTDOM(-3)) | -0.3939 | 0.1068 | 0.0042 |
| D(LTTRD(-1)) | -0.7249 | 0.1497 | 0.0007 |
| C | 4.2578 | 0.7117 | 0.0001 |
| N=25 | | | |
| Adjusted R-squared | 0.6622 | | |
| S.E. of regression | 0.0050 | | |
| F-statistic | 4.3609 | | |
| Prob(F-statistic) | 0.0122 | | |
| | Test-Statistics | P-value | |
| Jarque-Bera Normality Test | 0.1739 | 0.9167 | |
| Breusch-Godfrey LM Test (Lag 4) | 4.0330 | 0.0635 | |
| ARCH Test (Lag 1) | 1.8496 | 0.1865 | |
| Ramsey Reset (Lag 1) | 0.0101 | 0.9223 | |

## Table D: Indonesia: Unrestricted Error Correction Model Results

| Variable | Coefficient | Std. Error | Prob. |
|---|---|---|---|
| LIGINI(-1) | -1.1249 | 0.1841 | 0.0000 |
| LIGDPPC(-1) | -0.0290 | 0.0376 | 0.4543 |
| LIFDI(-1) | -0.1498 | 0.0508 | 0.0113 |
| LIDOM(-1) | -0.2066 | 0.0807 | 0.0238 |
| LITRD(-1) | 0.0404 | 0.0413 | 0.3458 |
| D(LIGINI(-1)) | 0.3813 | 0.1592 | 0.0324 |
| D(LIGDPPC(-3)) | -0.5015 | 0.2154 | 0.0367 |
| D(LIFDI(-2)) | 0.1053 | 0.0428 | 0.0287 |
| D(LIDOM(-1)) | 0.2709 | 0.0796 | 0.0047 |
| D(LITRD(-1)) | -0.1077 | 0.0340 | 0.0075 |
| D(LITRD(-3)) | -0.1447 | 0.0373 | 0.0019 |
| C | 2.3354 | 0.3644 | 0.0000 |
| N=25 | | | |
| Adjusted R-squared | 0.6377 | | |
| S.E. of regression | 0.0057 | | |
| F-statistic | 4.8409 | | |
| Prob(F-statistic) | 0.0045 | | |
| | Test-Statistics | P-value | |
| Jarque-Bera Normality Test | 1.5093 | 0.4702 | |
| Breusch-Godfrey LM Test (Lag 1) | 0.3774 | 0.5504 | |
| ARCH Test (Lag 1) | 0.2259 | 0.6393 | |
| Ramsey Reset (Lag 1) | 0.1936 | 0.6677 | |

## Table E: Philippines: Unrestricted Error Correction Model Results

| Variable | Coefficient | Std. Error | Prob. |
|---|---|---|---|
| LPGINI(-1) | -0.8930 | 0.2187 | 0.0015 |
| LPGDPPC(-1) | -0.0894 | 0.0485 | 0.0900 |
| LPFDI(-1) | 0.0056 | 0.0626 | 0.9300 |
| LPDOM(-1) | -0.1125 | 0.0198 | 0.0001 |
| LPTRD(-1) | 0.1096 | 0.0347 | 0.0082 |
| D(LPGINI(-1)) | 0.3959 | 0.1847 | 0.0533 |
| D(LPGINI(-2)) | 0.1388 | 0.1401 | 0.3416 |
| D(LPFDI(-1)) | -0.0470 | 0.0498 | 0.3635 |
| D(LPDOM(-1)) | 0.0714 | 0.0269 | 0.0212 |
| D(LPDOM(-2)) | 0.1050 | 0.0280 | 0.0028 |
| D(LPTRD(-1)) | -0.1859 | 0.0416 | 0.0008 |
| D(LPTRD(-2)) | -0.1456 | 0.0469 | 0.0091 |
| C | 1.7382 | 0.3969 | 0.0001 |
| N=25 | | | |
| Adjusted R-squared | 0.7176 | | |
| S.E. of regression | 0.0048 | | |
| F-statistic | 4.3609 | | |
| Prob(F-statistic) | 0.0122 | | |
| | Test-Statistics | P-value | |
| Jarque-Bera Normality Test | 0.0167 | 0.9917 | |
| Breusch-Godfrey LM Test (Lag 2) | 3.4290 | 0.0734 | |
| ARCH Test (Lag 1) | 3.7379 | 0.0662 | |
| Ramsey Reset (Lag 1) | 2.2562 | 0.1612 | |